Memphis Depot

Environmental Restoration Program Update

Presented by

Tom Holmes
Project Manager
MACTEC Engineering and Consulting, Inc.

Memphis Depot Restoration Advisory Board Meeting
October 20, 2005

Presentation Overview

Environmental Restoration Program Update

- Dunn Field Remedial Design Investigation
- Remedial Action
  - Dunn Field Disposal Sites
  - Main Installation
- Project Schedule/Next Steps

Remedial Design Investigation

- Field work scheduled for early October to mid-December 2005
- Collect additional data from Dunn Field and Depot community
  - Define extent of impacted soil and groundwater
- Information will be used to complete Remedial Designs for Source Areas and Off-Depot Groundwater
  - Soil Vapor Extraction (SVE)
  - Zero Valent Iron (ZVI)
  - Permeable Reactive Barrier (PRB)
  - Monitored Natural Attenuation (MNA)

Remedial Design Investigation

Fieldwork: Dunn Field

- Collect samples in Source Areas using Membrane Interface Probe (MIP)
  - Up to 260 sample locations in 40'x40' grid
  - Top layer of silty clay soils (~30 feet below ground surface)
  - Analyze chlorinated volatile organic compounds (CVOCs)
  - Define the boundaries for the SVE system
- Install 8 to 10 groundwater monitoring wells on Dunn Field
  - Define the boundaries for the ZVI treatment areas
  - Provide locations for long-term monitoring

MIP Sampling Locations and Grid

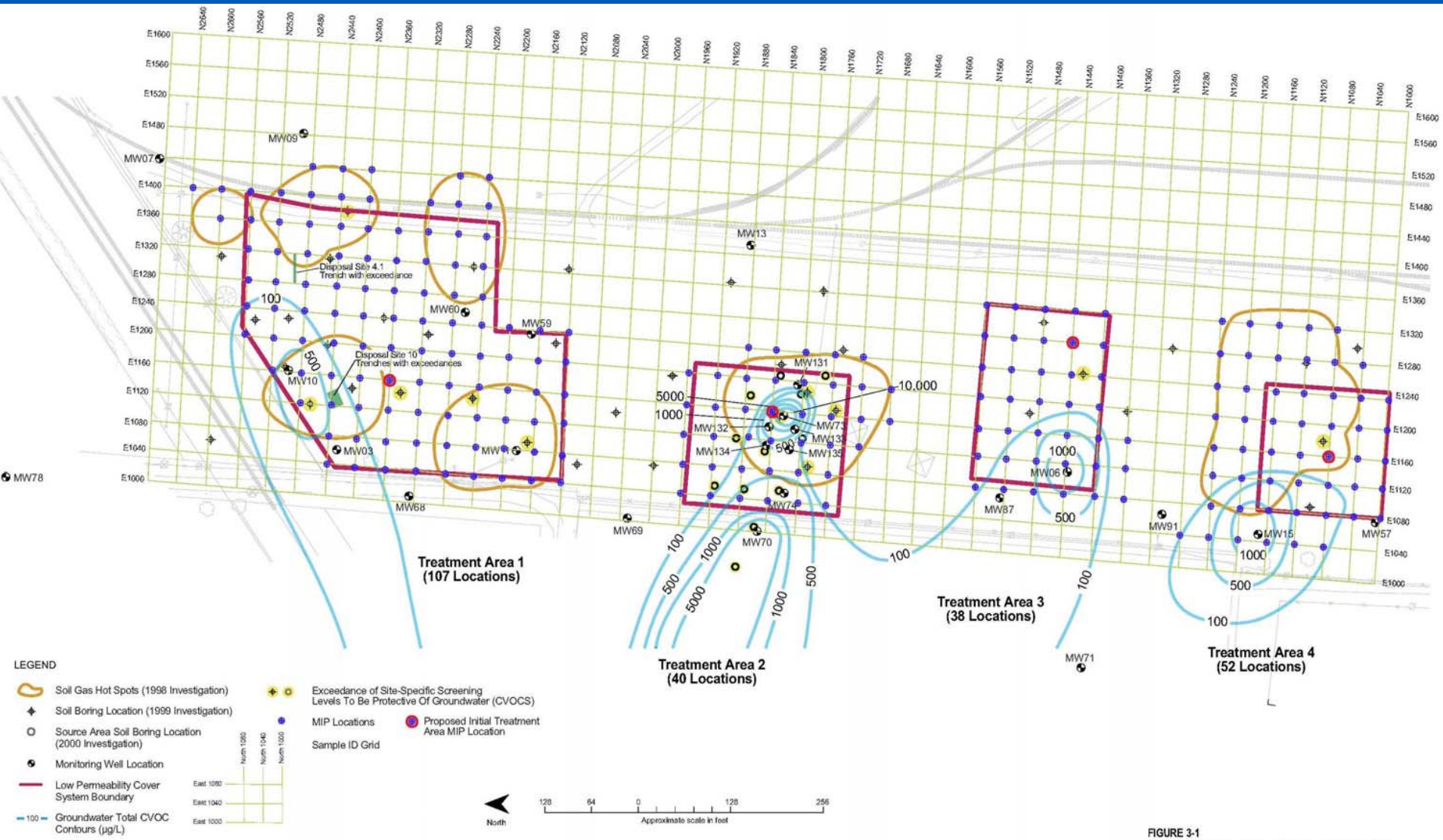


FIGURE 3-1
Proposed MIP Sample Locations and Sampling Grid
Memphis Depot Dunn Field Remedial Design Investigation

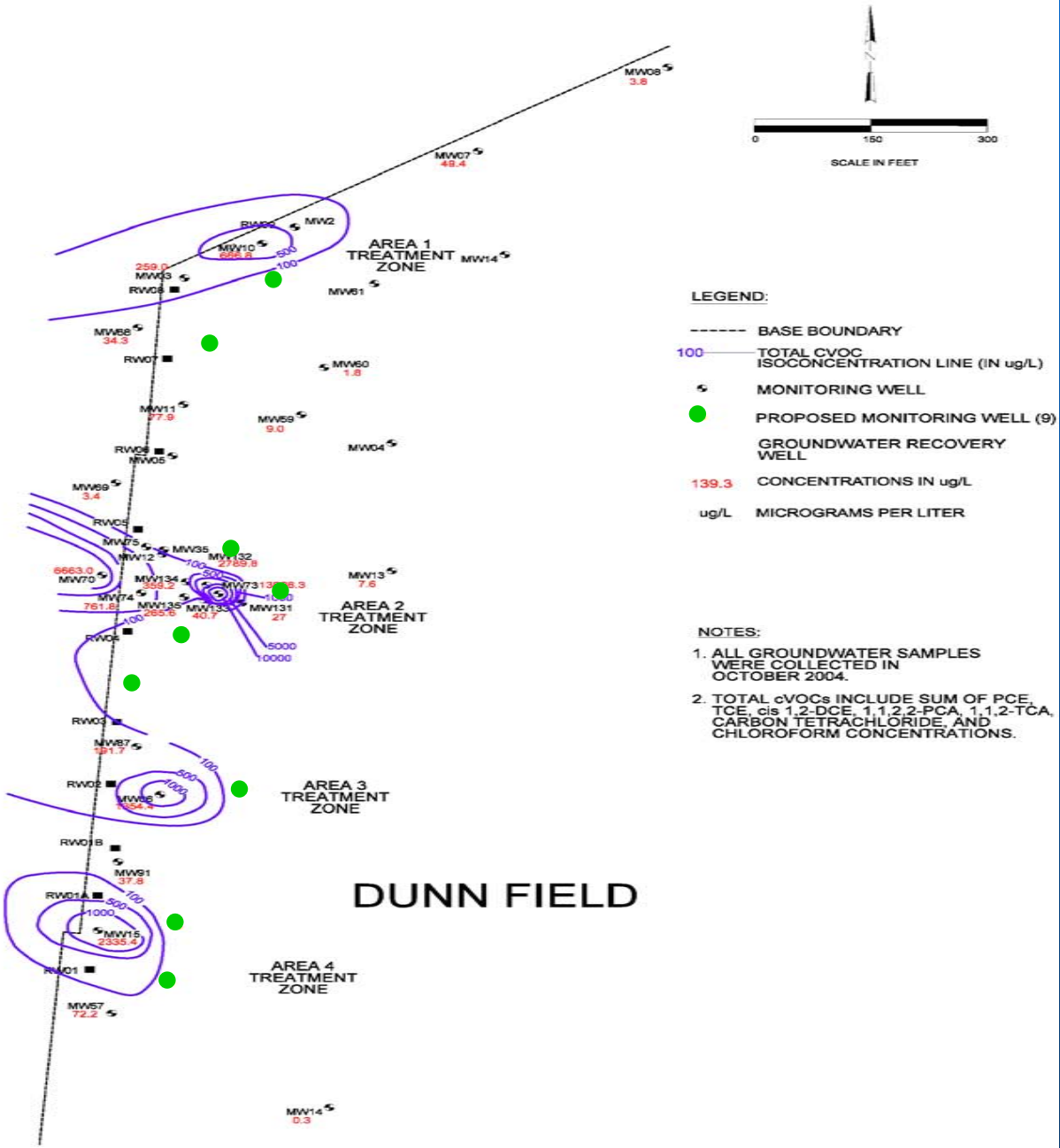


FIGURE 3-2
PROPOSED NEW ONSITE MONITORING WELL LOCATIONS
Memphis Depot Dunn Field
Remedial Design Investigation

CH2MHILL

ATL/CAD1/PROJECTS/148071 DDMT/PRD 2004/FIGURE 3-2 (DRI)

New Onsite Monitoring Wells

Remedial Design Investigation

Field Work: Off-Depot

- Install 5 groundwater monitoring wells and 6 soil borings
  - Gather additional data about the groundwater west of Dunn Field
  - Data pertinent to design, position, construct and monitor the PRB
- Work will take place at the following locations:
  - One well/six soil borings on vacant property; west side of Rozelle Street
  - Two wells along railway tracks; west of Dunn Field
  - One well on church property; north side of Person Street and west of Ragan Street
  - One well on MLGW property; north side of Person Street and east of Ragan Street

New Off-Depot Monitoring Wells and Soil Borings

LEGEND:

- DEPOT BOUNDARY
- BASE BOUNDARY
- MW — MONITORING WELL SCREENED IN FLUVIAL AQUIFER
- MW — MONITORING WELL SCREENED IN INTERMEDIATE AQUIFER
- RW — GROUNDWATER EXTRACTION WELL
- MW — MONITORING WELL SCREENED IN MEMPHIS AQUIFER
- PROPOSED FLUVIAL AQUIFER MONITORING WELL (3)
- PROPOSED INTERMEDIATE AQUIFER MONITORING WELL (2)
- PROPOSED SOIL BORING (6)
- ug/L — MICROGRAMS PER LITER

NOTES:

1. ALL SAMPLES WERE COLLECTED IN OCTOBER 2004, EXCEPT THOSE INDICATED BELOW.
2. MW-145, MW-149, MW-153, MW-154 AND MW-156 WERE COLLECTED IN AUGUST 2004.
3. MW-165, MW-166, MW-167, MW-168A WERE COLLECTED IN NOVEMBER 2004.
4. MW-169, MW-170, AND MW-171 WERE COLLECTED IN DECEMBER 2004.
5. MW-7, -8, -9, -29, -30, -33, -40, -42, -43, -44, -51, -54, -68, -69, -70, -76, -77, -79, -80, -95, -126, -127, -129, AND -130 WERE COLLECTED USING DIFFUSION SAMPLERS.
6. ALL OTHER MONITORING WELLS WERE SAMPLED USING LOW-FLOW TECHNIQUES.
7. CVOCS INCLUDE SUM OF PCE, TCE, cis 1,2-DCE, 1,1,2,2-PCA, 1,1,2-TCA, CARBON TETRACHLORIDE, AND CHLOROFORM CONCENTRATIONS.

FIGURE 3-3
PROPOSED NEW OFF-DEPOT MONITORING WELL AND SOIL BORING LOCATIONS
MEMPHIS DEPOT DUNN FIELD REMEDIAL DESIGN INVESTIGATION

CH2MHILL

Remedial Design Investigation

RDI Work Plan

- EPA and TDEC approval – September 2005
- Field work is protective of human health and environment
  - Air monitoring, dust control measures, personal protective equipment for workers, and cleaning protocols for equipment
  - Safety fencing at Dunn Field and flagging of off-Depot work areas will restrict public access to the investigation sites

Disposal Sites Remedial Action

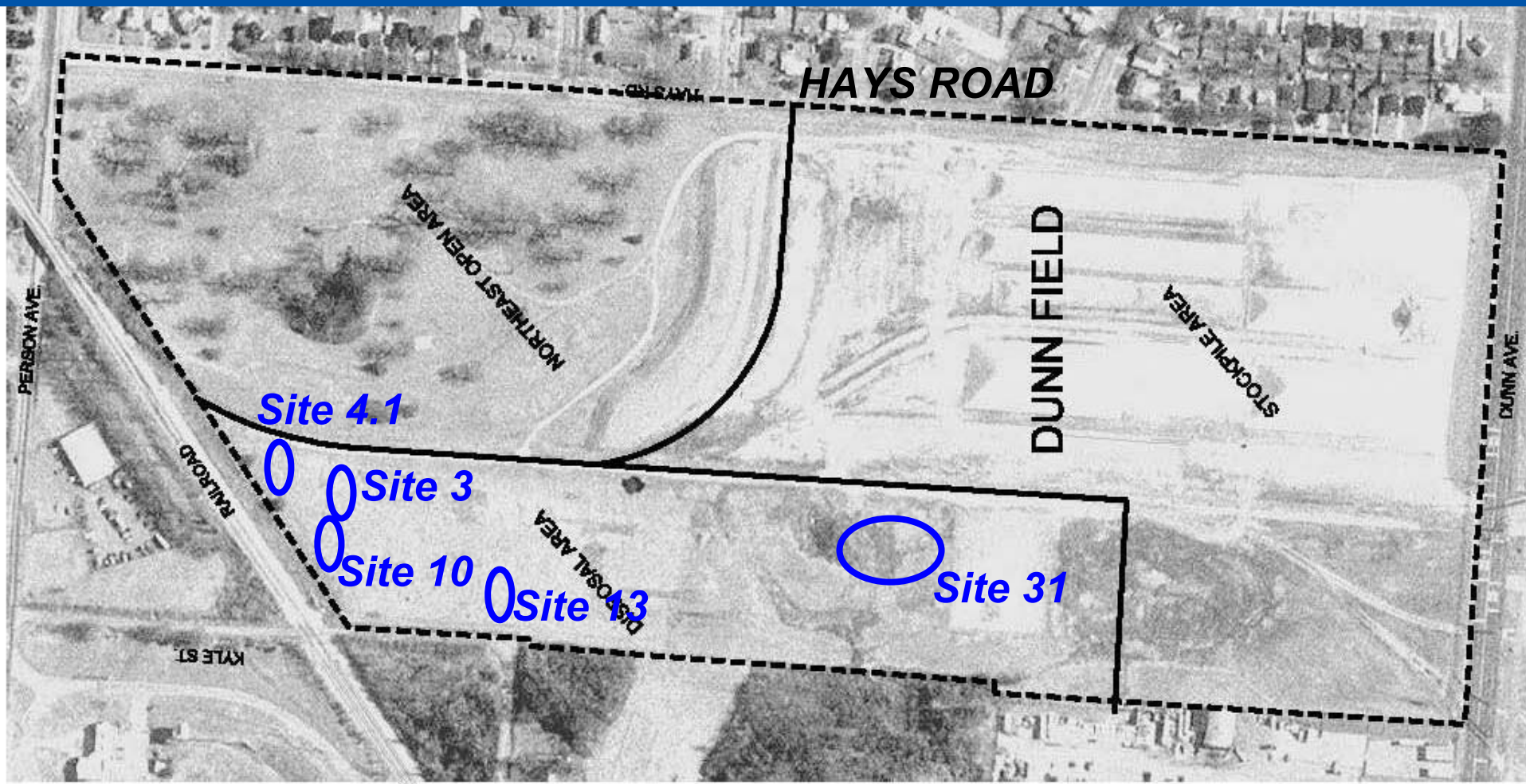
Excavation, Transport and Disposal (ETD)

- Remedial Action began March 2005
- Completed work on Sites 4.1, 13 and 31 in May
  - Excavation, confirmation and characterization sampling, transportation, disposal, backfill and site restoration

Disposal Sites Remedial Action

- Additional excavation required at Sites 10 and 3
  - Former burn pit unearthed at Site 10
  - Sealed glass bottles found at Site 3 (acidified water with low levels of ortho-toluidine)
- Work plan addendum in preparation
- Work scheduled to resume November 2005
- RA Completion Report
  - Final report will be available in Information Repositories upon completion.

Disposal Sites Remedial Action



Main Installation Remedial Action

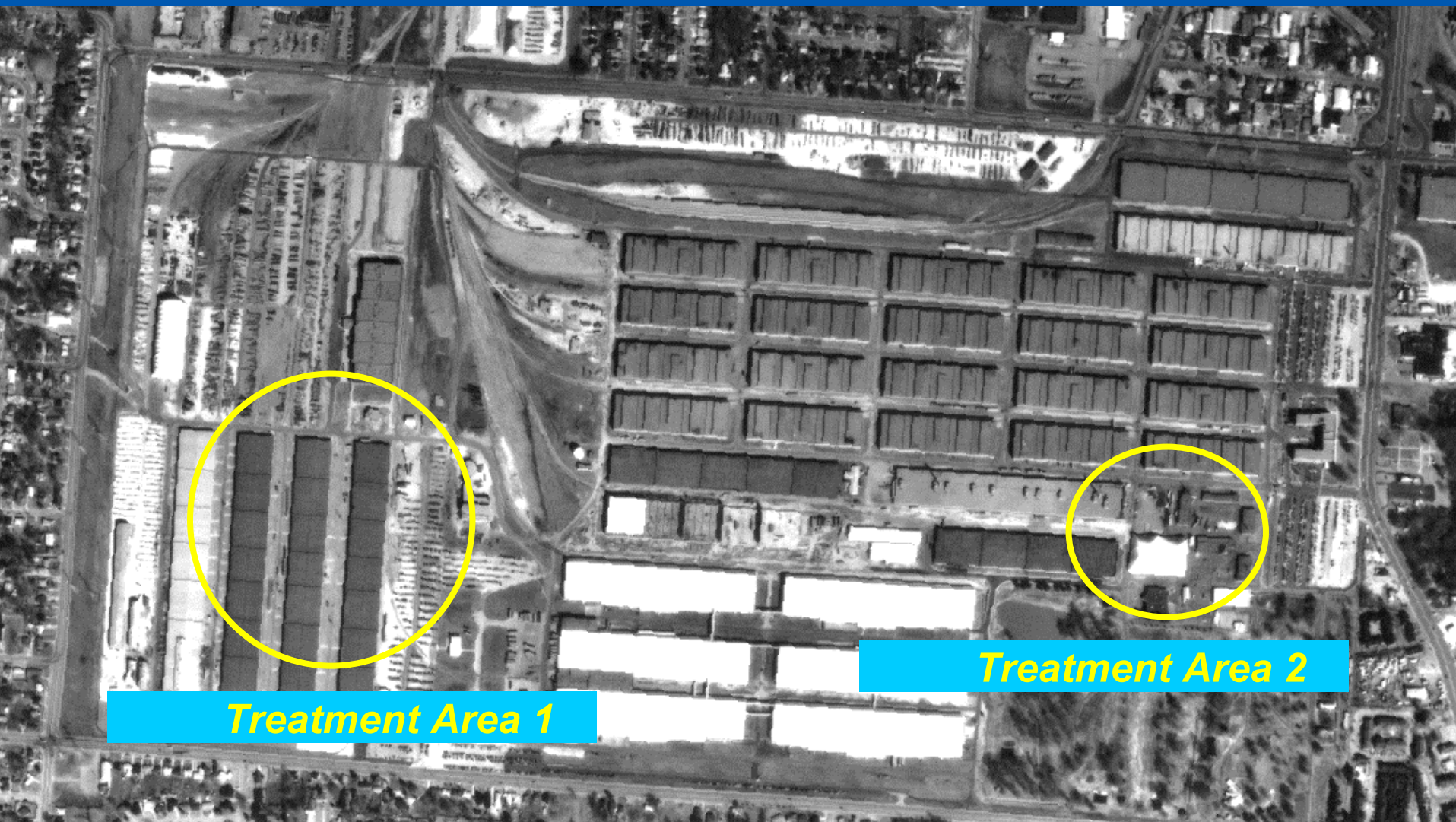
Enhanced Bioremediation Treatment

- Remedial Design Public Briefing – July 2005
- Remedial Action Work Plan – September 12, 2005
  - Final injection and monitoring well locations
  - Sodium lactate injection procedures
  - Groundwater monitoring plan

Main Installation Remedial Action

- **Health and Safety Plan**
  - Air monitoring, dust control measures, personal protective equipment for workers, and cleaning protocols for equipment
  - Safety fencing of work areas will restrict public access
- **Remedial Action – First Quarter 2006**
  - Work Plan is available in Information Repositories

Main Installation Remedial Action



Project Schedule – Next Steps

Fourth Quarter 2005 – First Quarter 2006

- Complete Disposal Sites Remedial Action
  - Excavation, Transport and Disposal
- Begin Main Installation Remedial Action (MI RA)
  - Enhanced Bioremediation

Projected dates are based on current information and may be subject to change

Next Steps

2006

- Complete Source Areas Remedial Design
  - Soil Vapor Extraction (SVE) and Zero-Valent Iron (ZVI)
- Complete Disposal Sites RA Completion Report
- Conduct Source Areas RD Public Briefing

Projected dates are based on current information and may be subject to change

Next Steps

2007

- Begin Source Areas Remedial Action
- Complete Off-Depot Groundwater Remedial Design
  - Permeable Reactive Barrier (PRB) and Monitored Natural Attenuation (MNA)
- Conduct Off-Depot Groundwater Remedial Design Public Briefing
- Begin Off-Depot Groundwater Remedial Action

Projected dates are based on current information and may be subject to change

Next Steps

2008

- Receive EPA Operating Properly and Successfully Determination for the MI RA
- Conduct FOST 5 (remainder of MI) Public Comment Period

2009

- Receive EPA Operating Properly and Successfully Determination for the Source Areas and Off-Depot Groundwater RAs
- Conduct FOST 6 (remainder of Dunn Field) Public Comment Period

Projected dates are based on current information and may be subject to change

Memphis Depot

Environmental Restoration Program Update

Presented by

Tom Holmes
Project Manager
MACTEC Engineering and Consulting, Inc.

Memphis Depot Restoration Advisory Board Meeting
October 20, 2005